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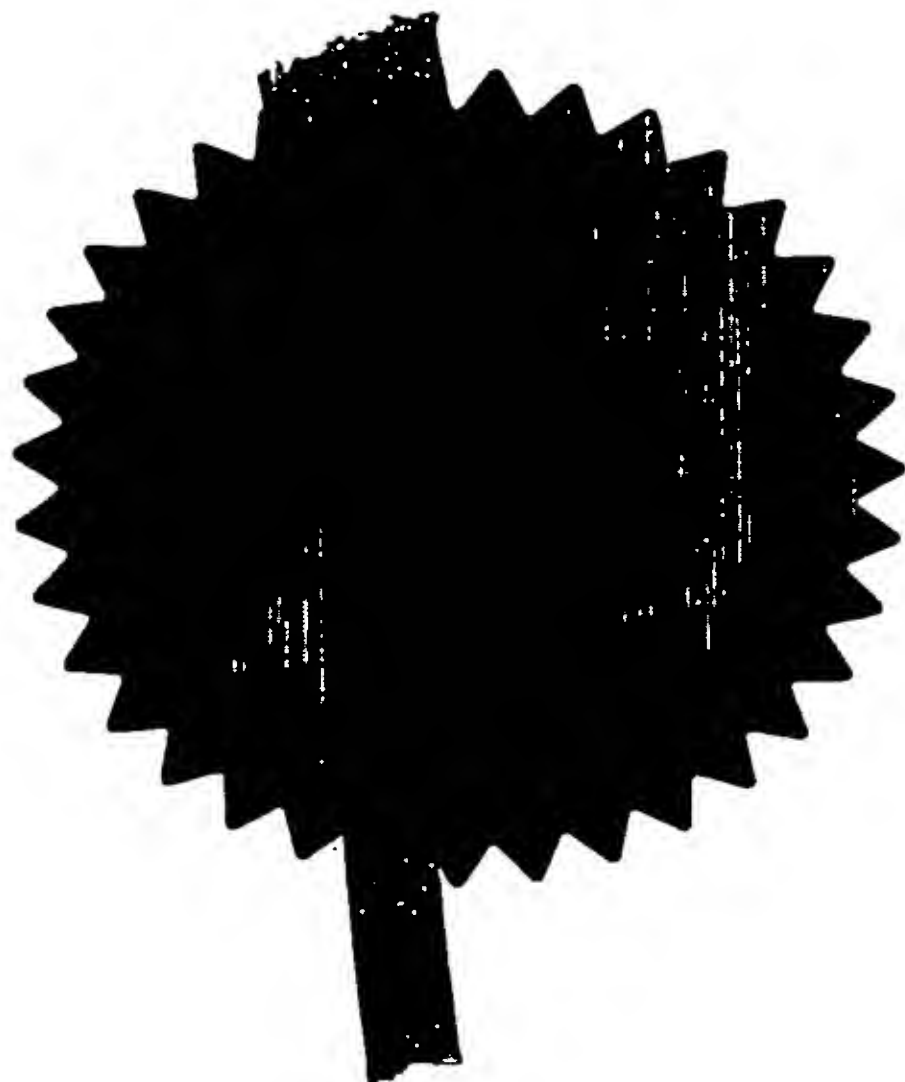
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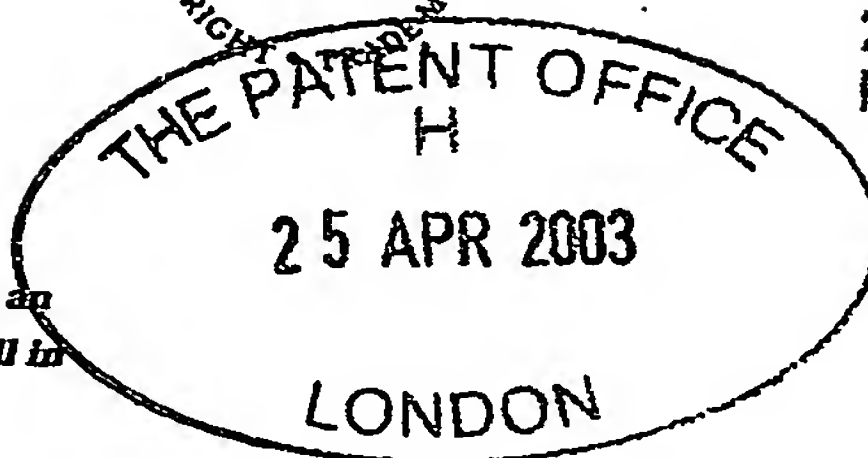
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28APR03 E802882-1 002855
P01/7700 0.00-0309503.1

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The Patent Office

Cardiff Road
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South Wales
NP10 8QQ

1. Your reference

1/PP40001GB

2. Patent application number

(The Patent Office will fill in this part)

0309503.1

25 APR 2003

3. Full name, address and postcode of the or of each applicant (underline all surnames)

GDX AUTOMOTIVE REHBURG GMBH & CO.
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31547 Rehburg Loccum
GERMANY

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

GERMANY

861 9603001

4. Title of the invention

PANEL-SHAPED MEMBERS WITH STRIPS
JOINED TO THEM, AND ASSOCIATED
METHODS

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom
to which all correspondence should be sent
(including the postcode)

MATHISEN & MACARA
The Coach House
6-8 Swakeleys Road
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UB10 8BZ

Patents ADP number (if you know it)

1594001

8188245001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number
(if you know it)

Date of filing
(day / month / year)

U.K.

0301597.1

23 January 2003

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

YES

- a) any applicant named in part 3 is not an inventor, or
 - b) there is an inventor who is not named as an applicant, or
 - c) any named applicant is a corporate body.
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Continuation sheets of this form

Description

7 —

Claim(s)

5 —

Abstract

1 —

Drawing(s)

5 TS

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10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Mathisen & Macara

Date

MATHISEN & MACARA 25th April 2003

12. Name and daytime telephone number of person to contact in the United Kingdom

MR D.M. FOSTER (01895 678331)

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FV:PP40001GB:030424

PATENT SPECIFICATION

APPLICANTS:

GDX AUTOMOTIVE REHBURG GMBH & CO.
KG

CASE CODE:

"Bonded Seal II" (GDX-7630)

FORMAL TITLE:

PANEL-SHAPED MEMBERS WITH STRIPS
JOINED TO THEM, AND ASSOCIATED
METHODS

APPLICATION NO:

FILED:

PRIORITY CLAIMED:

United Kingdom, No. 0301597.1
filed 23rd January 2003

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6 - 8 Swakeleys Road,
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Agents for the Applicants

PANEL-SHAPED MEMBERS WITH STRIPS JOINED TO THEM,
AND ASSOCIATED METHODS

The invention relates to panel-shaped members with strips joined to them, and associated methods. Strip arrangements embodying the invention, to be described in more detail below by way of example only, can be used in motor vehicle body construction, such as for sealing purposes relating to vehicle windows and for similar applications in vehicles.

According to the invention, there is provided a panel-shaped member and strip combination, the strip defining a region in which is received bonding material which secures the strip to a surface of the member, the bonding material being covered by the strip, with a primer optionally applied to the surface of the member before the application thereto of the bonding material.

According to the invention, there is further provided a method of joining a panel-shaped member to a strip, comprising the step of forming a recessed region in a surface of the strip and placing bonding material in the region which secures the strip to a surface of the member, the bonding material being covered by the strip.

Window arrangements comprising windscreen glass panels with strips secured to them and embodying the invention, and methods according to the invention of making such

arrangements, will now be described, by way of example only, with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a side view of a motor vehicle body incorporating one or more of the strips;

Figure 2 is a cross-section through an edge of the windscreen opening of the vehicle body shown in Figure 1, showing one of the strip arrangements;

Figure 3a shows a modification to the arrangement of Figure 2;

Figure 3b shows a further modification to the arrangements of Figures 2 and 3a;

Figure 4 is a cross-section on the line IV-IV of Figure 1; and

Figure 5 corresponds to Figure 4 but shows a modification.

Figure 2 shows the windscreen glass 10 of the vehicle body shown in Figure 1, and the adjacent body panel 12 defining part of the windscreen opening. The windscreen glass 10 is secured in position, to the body panel 12, by a bead of suitable adhesive 14, such as extruded material. Instead, however, the glass 10 may be the glass of another window (e.g. side or rear window) in the vehicle body in which case the body panel 12 will define the appropriate window opening.

In order to provide a seal between the edge 10A of the windscreen glass 10 and the body panel 12, a sealing strip shown generally at 16 is provided. The strip 16 is made of suitable resilient and flexible material 18, such as plastics, rubber or thermoplastic elastomer material. It is extruded or moulded to have a body portion 18A and a sealing lip 18B and to define a hollow channel 18C with a re-entrant mouth 18D.

The strip 16 is secured to the windscreen glass 10 by means of suitable bonding material 20 such as polyurethane material. The material 20 fills the channel 18C and extends through the mouth 18D to adhere firmly to the surface of the windscreen glass 10. The material 20 in the channel 18C mechanically interlocks the strip 16 to the glass 10. Instead or in addition, the material 20 may adhere to the material of the strip 16.

During manufacture, the strip 16 is mounted in position on the outside surface of the windscreen glass 10. Polyurethane bonding material (PU) 20 is then injected (or otherwise placed) into the channel 18C from one end of the strip 16 so as to fill the channel and the mouth 18D and thus to hold the strip 16 firmly in position as the bonding material solidifies.

Preferably, a suitable primer is applied to help secure the polyurethane material to the glass and/or the strip 16.

The surface of the windscreen glass 10 may be curved, and thus the strip 16 may

correspondingly curved.

As shown in Figure 2, the sealing strip 16 may also include an external decorative part 22 such as made of metal or other material presenting bright external finish. The decorative part 22 may be clipped into position, with its distal edges extending into recesses in the strip 16, as illustrated.

In a case where the surface of the windscreen glass 10 is slightly curved, the strip 16 may be held in a matchingly curved configuration during the manufacturing process, such as by a suitable jig, and the decorative part 22 is correspondingly curved and secured onto the sealing strip 16. The sealing strip 16, with the decorative part 22 secured to it, is thus held in the required curved configuration and is mounted on the windscreen glass 10 using the polyurethane or other bonding material 20 in the manner described.

Figure 3a shows a modification to the arrangement of Figure 2. In Figure 3a, the sealing lip 18B is omitted. Instead, a seal between the edge of the windscreen glass 10 and the frame 12 is provided by other means, such as by the seal shown at 24. Alternatively, the seal 24 can be omitted altogether. Means defining a groove for collecting rain water may be provided.

Advantageously, the channel 18C is shaped to provide longitudinal recesses 18E having relatively narrow mouths and enlarged inner regions 18F (see Figure 3a), which provide

improved mechanical interlocking between the PU bonding material 20 and the body portion 18A.

Again, a primer can be applied to help secure the PU material to the glass and/or the strip 16.

In another modification, however, the strip 16 (with the decorative part 22 omitted) can be secured to the inside surface of the windscreen glass 30 in the same manner as shown in Figures 2 and 3.

Figure 3b shows a further modification in which parts corresponding to parts in Figures 2 and 3a are similarly referenced. As shown in Figure 3b, the strip 18A is secured (in the same manner as described with reference to Figures 2 and 3a to the surface of the edge 10A of the glass 30. A primer can advantageously be used here also.

Figure 4 shows the window glass 30 of the rear quarter light window of the vehicle shown in Figure 1. In this case, the window glass 30 is held in position within the rigid window frame 32 carried by the upper part of the rear door of the vehicle by means of a fixture 34.

The fixture 34 comprises a head 36 integral with a screw-threaded part 38 which extends through a hole 40 in the window frame 32 and threadedly engages a hollow bore 42 in a mounting block 44 secured to the inside surface of the window glass 30. The mounting block 44 may be made of any suitable material and is securely attached, as by adhesive, to

the window glass 30. The underside of the head 36 of the fixture 34 bears against the inside surface of the window frame 32 and thus secures the window glass in position. A bead of sealing and/or adhesive material 46, which may be extruded, may also be present for providing additional sealing and securing action between the mounting block 44 and the window frame 32.

In order to provide a seal between the edge of the window glass 30 and the window frame 32, a sealing strip 48 is provided, which can be extruded or moulded from suitable resilient flexible material, such as plastics, rubber or thermoplastic elastomer. The strip 48 is formed to provide an open channel 48A having a mouth 48B.

In use, the strip 48 is placed along the edge of the window glass 30, and suitable bonding material 49, preferably polyurethane material, is injected (or otherwise placed) into the channel 48A from one end of the strip 48, so as to fill the channel and extend through the mouth 48B, adhering to the surface of the window glass 30. The material 49 in the channel 48A mechanically interlocks the strip 48 to the glass 30 so as to hold the strip firmly in position. Instead or in addition, the material 49 may adhere to the material of the strip 48.

Again, a primer can be used to help secure the PU material to the glass and/or the strip 48.

This process may be carried out before or after the window glass 30 is fixed to the

window frame by the fixture 34.

Figure 5 shows a modification to the arrangement of Figure 4, and parts in Figure 5 corresponding to those in Figure 4 are similarly referenced.

In the arrangement of Figure 5, however, a hole 50 is provided (shown dotted) which extends through the window glass 30 and the corresponding region of the mounting block 44. The sealing strip 48 is placed over the edge of the window glass 30, so that the hole 50 opens into the mouth 48B of the channel 48A. The polyurethane or other bonding material 49 can thus be injected into the channel 48A through the hole 50. More than one such hole can be provided. Again, a primer can be used in the manner already explained.

The windscreen 10 or the quarter light 30 can be made of polycarbonate or similar material instead of glass.

However, although the foregoing description has related to the securing of a sealing strip to the translucent or transparent member of a window opening, it could instead relate to the securing of a strip to some other panel-shaped member not for a window opening — such as, for example, a closure member for an opening.

CLAIMS

1. A panel-shaped member and strip combination, the strip defining a region in which is received bonding material which secures the strip to a surface of the member, the bonding material being covered by the strip, with a primer optionally applied to the surface of the member before the application thereto of the bonding material.
2. The combination according to claim 1, in which the bonding material is polyurethane material.
3. The combination according to claim 1 or 2, in which the region is a channel or groove in the material of the strip, the channel or groove being connected to the surface of the strip which is in contact with the surface of the member.
4. The combination according to claim 3, in which the channel is connected to the said surface of the strip by a narrowed mouth.
5. The combination according to claim 4, in which the sides of the channel are connected to the narrowed mouth by inwardly directed wall portions which extend to the mouth in directions inclined away from the said surface of the strip to provide a mechanical interlock between the material of the strip and the bonding material.

6. The combination according to any one of claims 3 to 5, in which the bonding material is injected into the channel or groove from at least one end thereof.
7. The combination according to any one of claims 3 to 5, in which the bonding material is injected into the channel or groove through an aperture in the panel-shaped member.
8. The combination according to any preceding claim, in which the surface of the panel-shaped member is or includes an edge surface thereof.
9. The combination according to any preceding claim, in which the strip has a sealing portion extending therefrom for sealing against a surround or partial surround of the panel-shaped member.
10. The combination according to claim 9, in which the strip carries a decorative part.
11. The combination according to claim 10, in which the decorative part is clipped to the strip.
12. The combination according to any preceding claim, in which the panel-shaped member is made of transparent or translucent material such as for a window.

13. The combination according to any one of claims 8 to 11, in which the panel-shaped member is made of transparent or translucent material for a window and the surround is part of the frame of a window opening.
14. A method of joining a panel-shaped member to a strip, comprising the step of forming a recessed region in a surface of the strip and placing bonding material in the region which secures the strip to a surface of the member, the bonding material being covered by the strip.
15. A method according to claim 14, in which the bonding material is polyurethane material.
16. A method according to claim 14 or 15, in which the region is a channel or groove in the material of the strip, the channel or groove being connected to the surface of the strip which is in contact with the surface of the member.
17. A method according to claim 16, in which the channel is connected to the surface of the strip by a narrowed mouth.
18. A method according to claim 17, in which the sides of the channel are connected to the narrowed mouth by inwardly directed wall portions which extend to the mouth in directions inclined away from the said surface of the strip to provide a mechanical

interlock between the material of the strip and the bonding material.

19. A method according to claim 17 or 18, in which the bonding material is injected into the channel or groove from at least one end thereof.
20. A method according to claim 17 or 18, in which the polyurethane bonding material is injected into the channel or groove through at least one aperture in the panel-shaped member.
21. A panel-shaped member and strip combination, substantially as described with reference to Figure 2 of the accompanying drawings.
22. A panel-shaped member and strip combination, substantially as described with reference to Figure 3a of the accompanying drawings.
23. A panel-shaped member and strip combination, substantially as described with reference to Figure 3b of the accompanying drawings.
24. A panel-shaped member and strip combination, substantially as described with reference to Figure 4 of the accompanying drawings.
25. A panel-shaped member and strip combination, substantially as described with

reference to Figure 5 of the accompanying drawings.

26. A method of joining a panel-shaped member to a strip, substantially as described with reference to Figure 2 of the accompanying drawings.

27. A method of joining a panel-shaped member to a strip, substantially as described with reference to Figure 3a of the accompanying drawings.

28. A method of joining a panel-shaped member to a strip, substantially as described with reference to Figure 3b of the accompanying drawings.

29. A method of joining a panel-shaped member to a strip, substantially as described with reference to Figure 4 of the accompanying drawings.

30. A method of joining a panel-shaped member to a strip, substantially as described with reference to Figure 5 of the accompanying drawings.

ABSTRACT (Figure 2)

A windscreen glass (10) is secured in position adjacent a body panel (12) of a windscreen opening in a motor vehicle body by a bead of suitable adhesive (14), such as extruded material. In order to provide a seal between the edge (10A) of the window glass (10) and the body panel (12), a strip (16) made of suitable resilient flexible material is secured to the surface of the window glass (10) by means of bonding material (20), preferably polyurethane, which is injected or otherwise placed into an open-mouthed channel (18C) in the strip (16) and thus adheres both to the material of the strip (16) and to the adjacent surface of the window glass (10). The strip (16) has a flexible sealing lip (18B). The polyurethane material (20) may be injected from a longitudinal end of the channel (18C). In a modification, the polyurethane material (20) may be injected through an opening through the window glass (10).

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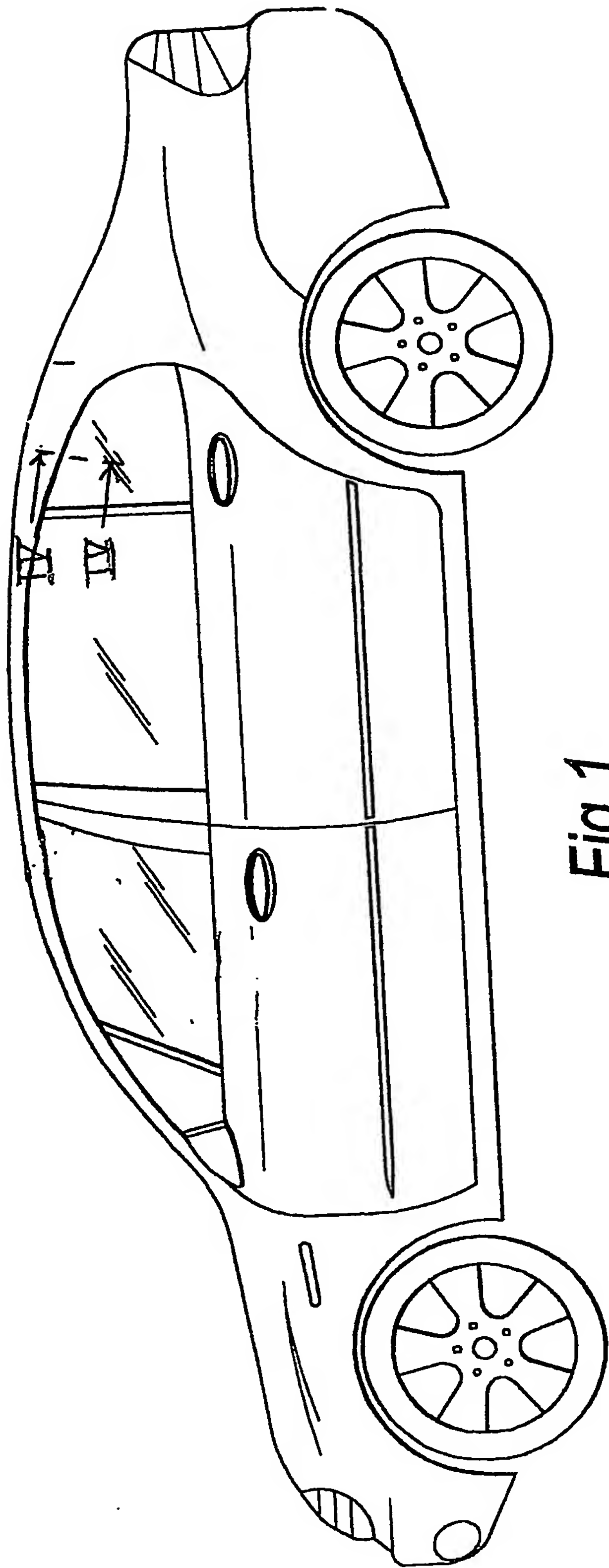


Fig. 1

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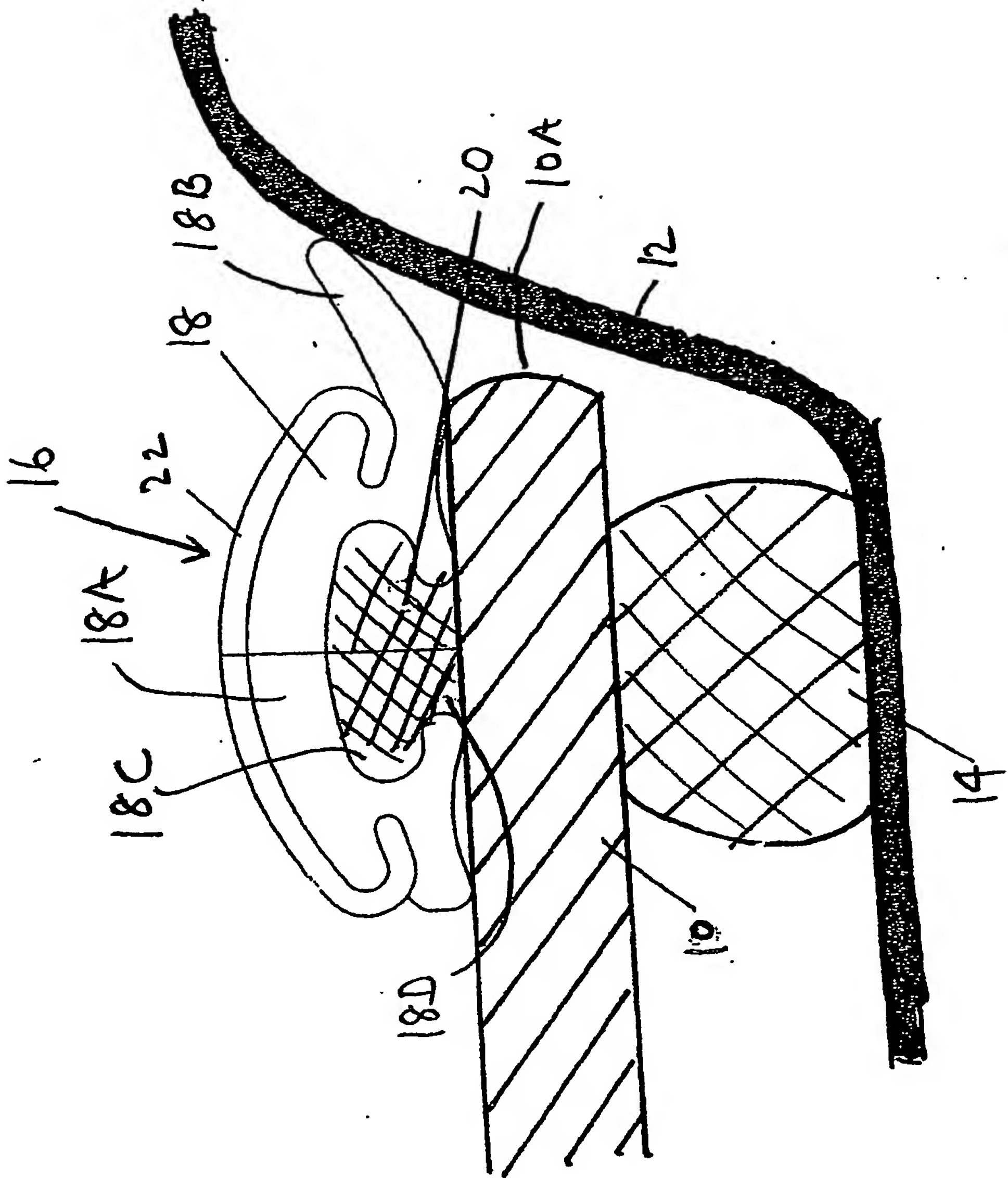


Fig. 2

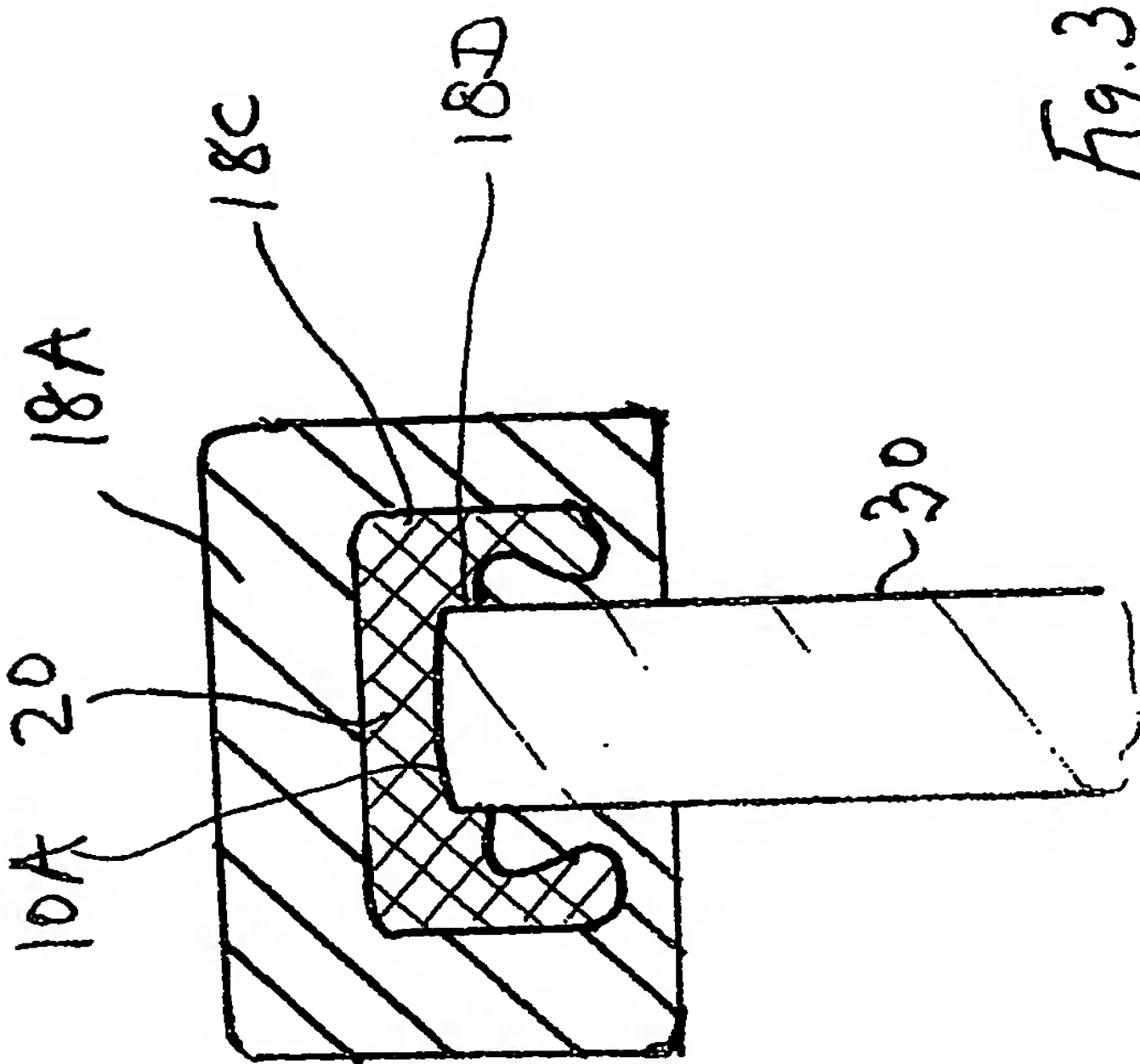


Fig. 3b

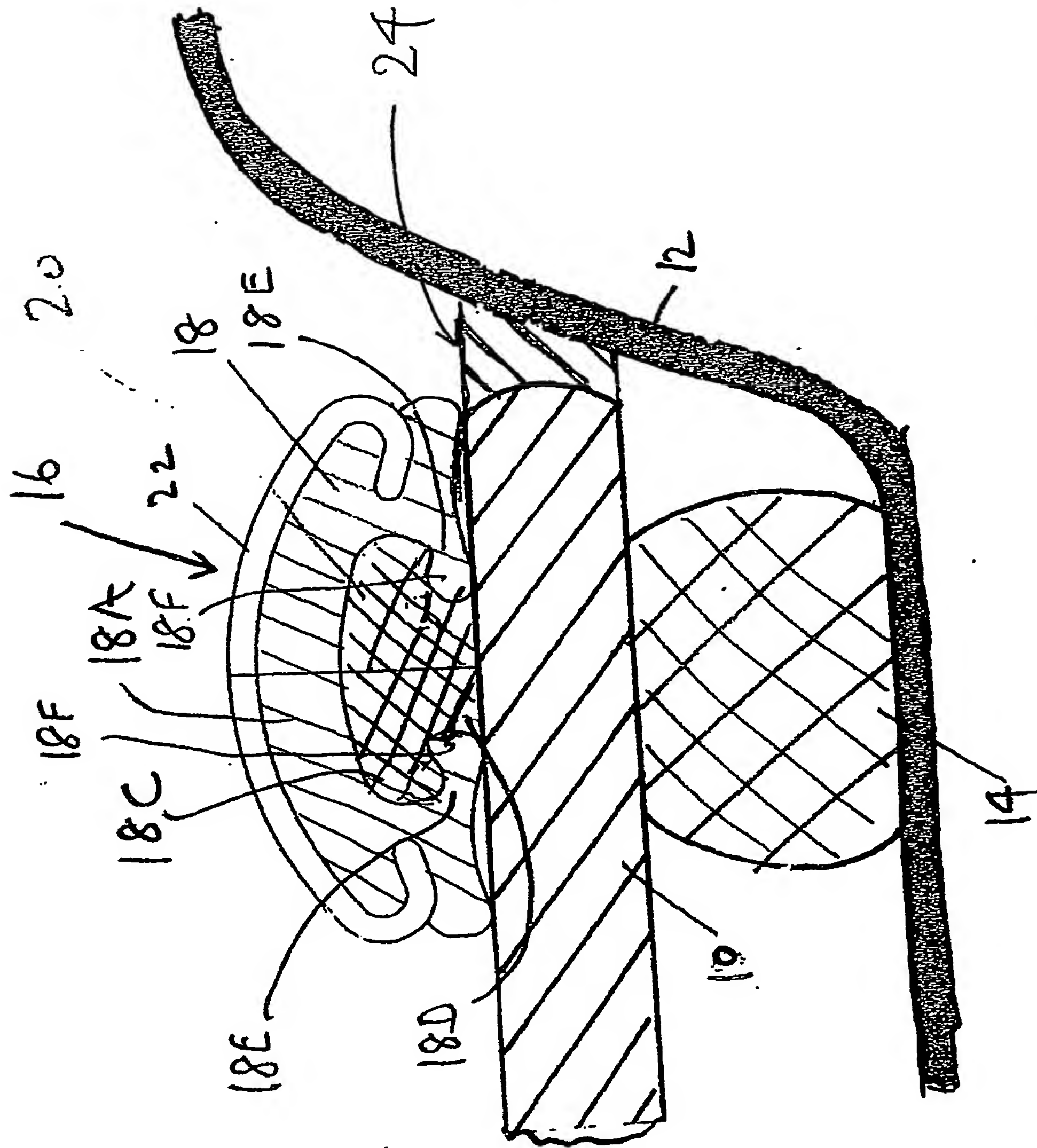


Fig. 3a

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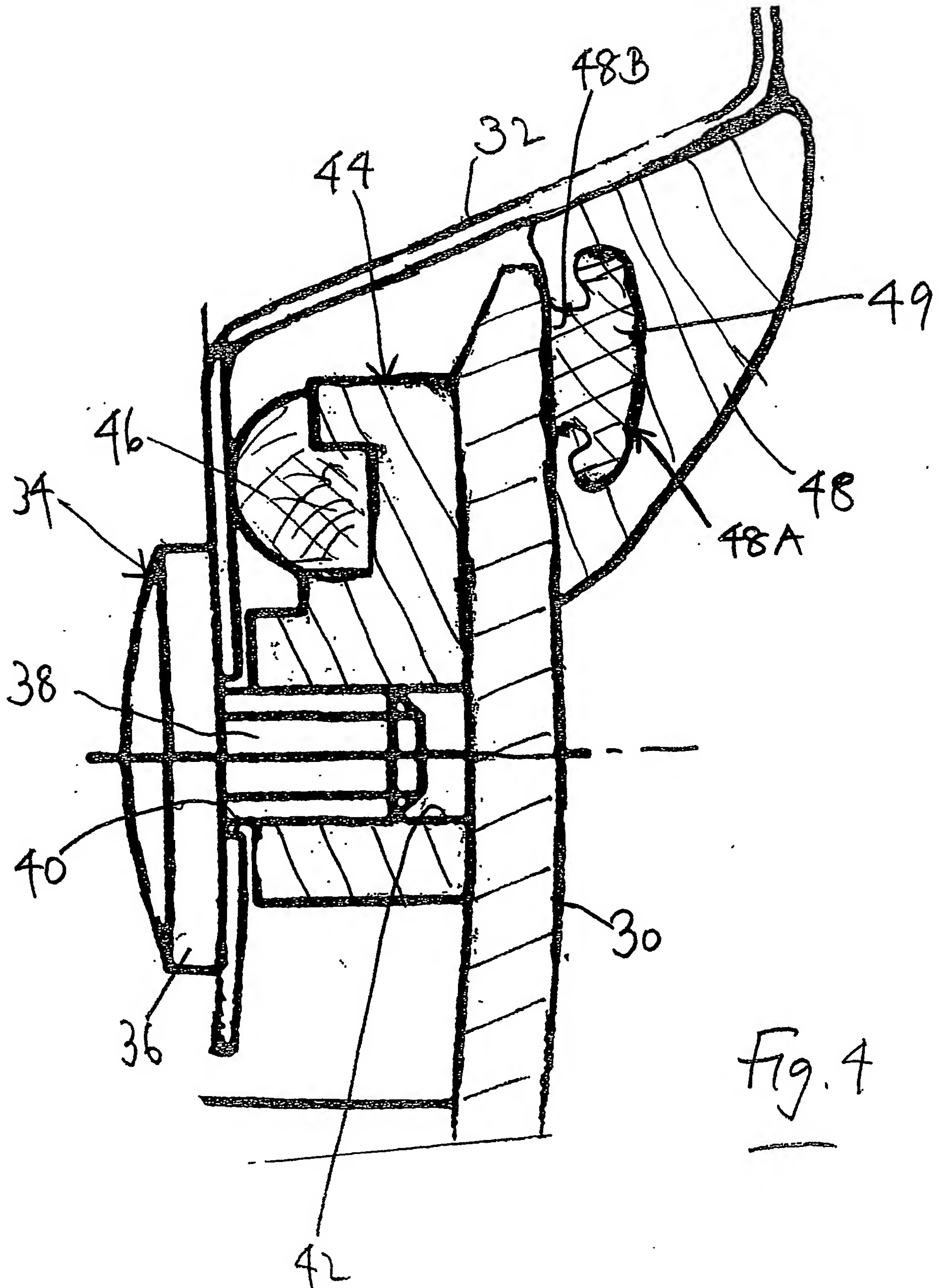


Fig. 4

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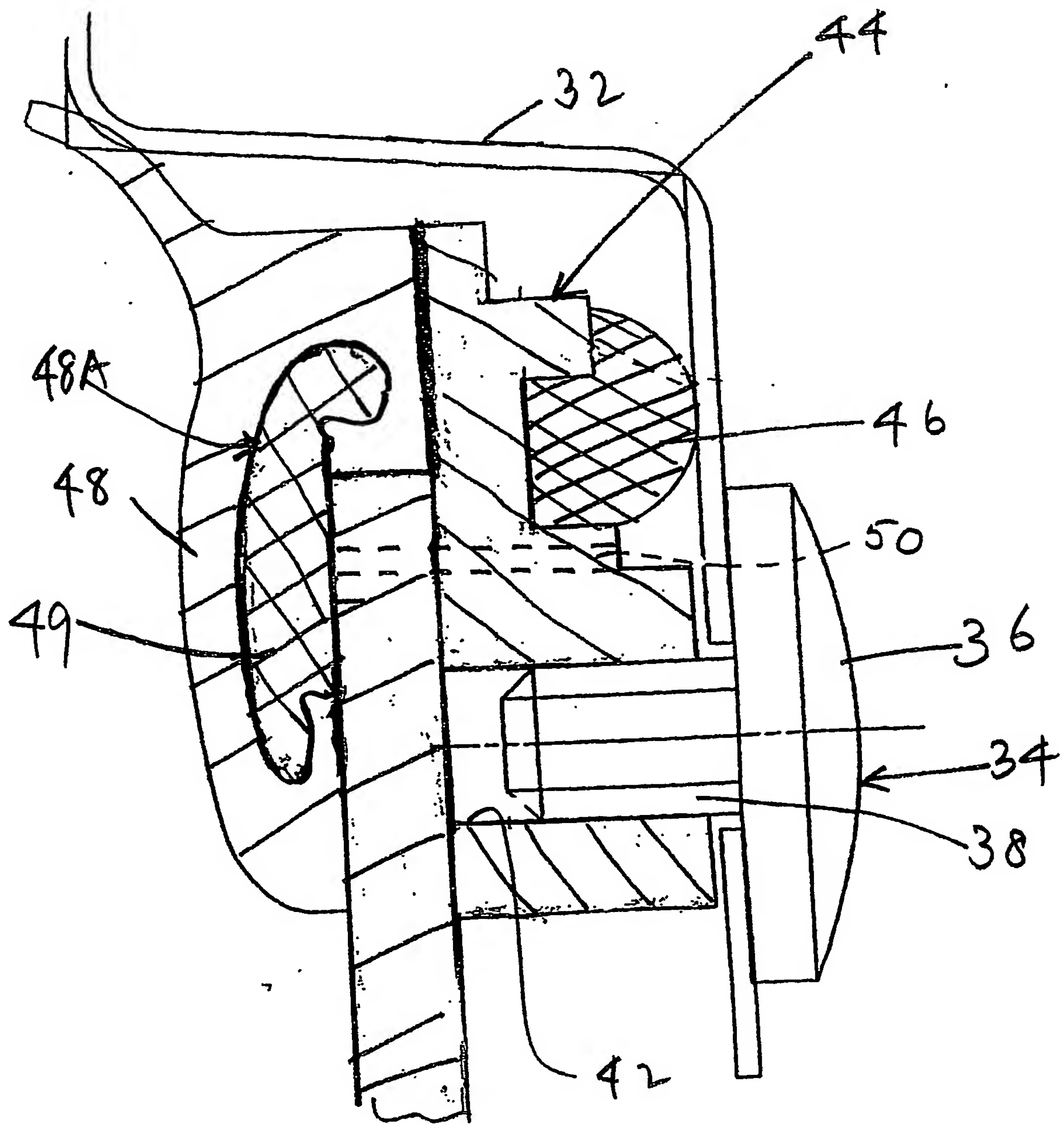
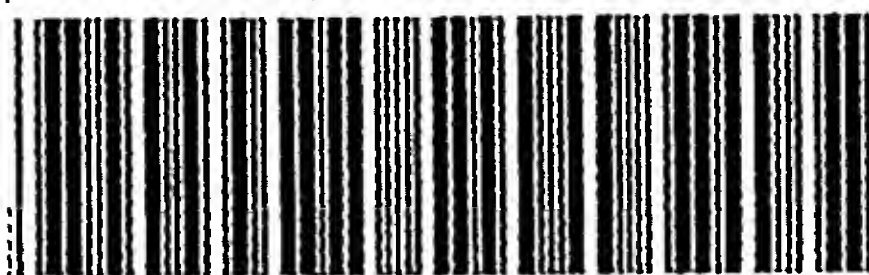


Fig. 5

PCT Application

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